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Solution of the problem of optimal control of initial-boundary value conditions of a hyperbolic system on the basis of exact increment formulas. (English. Russian original)

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The paper considers an optimal control problem governed by a linear hyperbolic system in the rectangle $(x, t) \in D = [x_1, x_2] \times [t_0, T]$ with control in the boundary conditions and a linear cost functional. The specific of the problem is that the boundary conditions are given in the form of ordinary differential equations (with respect to the time variable) that contain controls. The author gives formulae for the increment of the cost functional by reducing the original problem to an optimal control problem for ordinary differential equations on the boundary of the rectangle D .

Reviewer: [Uldis Raitums \(Riga\)](#)

MSC:

- [49K20](#) Optimality conditions for problems involving partial differential equations
- [35L50](#) Initial-boundary value problems for first-order hyperbolic systems
- [49M05](#) Numerical methods based on necessary conditions

Keywords:

[linear hyperbolic system](#); [boundary control](#); [increment of cost functional](#)